

检索...

检索

高级检索 (<http://www.nggs.ac.cn/CN/1672-1926/home.shtml>)

作者投稿

专家审稿

编辑办公

天然气地球科学 (<http://www.nggs.ac.cn>)

• 天然气开发 •

◀ 上一篇 (<http://www.nggs.ac.cn/CN/abstract/abstract3748.shtml>)

下一篇 ▶ (<http://www.nggs.ac.cn/CN/abstract/abstract3750.shtml>)

回压应力敏感性评价测试方法研究

田巍, 朱维耀, 朱华银, 张雪龄, 王瑞明, 李勇 ▼

Study on Testing Method of Back-pressure Stress Sensitivity Evaluation

TIAN Wei, ZHU Wei-yao, ZHU Hua-yin, ZHANG Xue-ling, WANG Rui-ming, LI Yong ▼



PDF (PC)

136

摘要/Abstract

摘要 :

为了寻求回压应力敏感性评价合理的测定方法,对现行部颁标准中的方法进行详细分析,并指出其存在的问题,分析认为:现行部颁标准和原标准相比有改进,但仍不具体,仅对围压作了规定,测定结果不能排除净围压变化的影响,在气藏实际开采过程中,井底压力降低导致的有效应力变化由近井地带向远处延伸,并在压降漏斗控制下越来越弱。基于上述分析,设计出一套测定回压应力敏感性的方法,该方法要求围压和上游压力恒定,并分别等于实际储层上覆压力和原始地层压力,回压从原始地层压力降低至废弃压力,分别测定各回压下渗透率变化情况,通过将该方法应用到致密砂岩,测得渗透率伤害率为21%左右,弱敏感,实验曲线分为陡峭段和平缓段,存在拐点,测定结果符合预期,可以将该方法推广到以后的实验和研究中。

**关键词:** 评价,回压,应力敏感,净应力,上覆压力,渗透率变化率

**Abstract:**

In order to seek for a set of reasonable measurement method for evaluation of back pressure stress sensitivity,current national standards are analyzed and the deficiencies are pointed out.The results show that the current national standard is not concrete although it is advanced compared with the original standard.It demands a constant confining pressure during the measurement process,but did not mention how to control the inlet pressure.The experiment simulated reservoir conditions well.According to the national standard definition for the net confining pressure and net stress,it can be speculated that inlet pressure changed with the changes of back pressure,but there is no confinement for pressure differential between upstream and downstream.A simple experiment is designed for inner pressure,it indicates the measurement process is simultaneously affected by the confining pressure and the back pressure.The current exploration are mostly devoted to the back pressure stress sensitivity considering the inner pressure changes,but it cannot well simulate the actual development process of gas reservoir.The actual situation is that the effective stress increases in the near oil wellbore area as the production well bottom pressure decreases,and extend into far wellbore area.This trend becomes weaker from the near to the distant due to the existence of pressure drop funnel.Based on the above analysis,a new set of measurement method for back pressure stress sensitivity is established,which required a constant confining pressure and upstream pressure.These pressure should equal to the overlying pressure and the original reservoir pressure of the actual reservoir respectively.The back pressure decreases from the original reservoir pressure to abandonment pressure points,which simulates the back pressure reduction process in the actual gas reservoirs development.The permeability is measured under different back pressure.This method is applied to measure the permeability of tight sandstone in Tuha oil field.The result shows that the permeability variation amplitude is about 21%,and the sensitivity degree is weak.The experimental permeability change rate curve is divided into steep section and gentle section,and an inflection point obviously existed.The measurement results agree well with expectations,so this new method can be applied to future tests and scientific research .

**Key words:** Evaluation, Back pressure, Stress sensitivity, Net stress, The overlying pressure, The change rate of permeability

**中图分类号:**

TE37

参考文献

相关文章 15

Metrics
本文评价
推荐阅读 0

✉ Email Alert ([../alert/showAlertInfo.do](http://alert/showAlertInfo.do))    📡 RSS ([../rss/showRssInfo.do](http://rss/showRssInfo.do))

地址：甘肃省兰州市天水中路8号 (730000)

电话：(0931)8277790 Email: [geogas@lzb.ac.cn](mailto:geogas@lzb.ac.cn)

版权所有 © 2018 天然气地球科学 编辑部



(<http://www.mitbeian.gov.cn>)

陇ICP备05000311号-2